

## U.S. DEPARTMENT OF COMMERCE PATENT &amp; TRADEMARK OFFICE

B/O Form PTO-1390		Transmittal Letter to the United States Designated/Elected Office (DO/EO/US) Concerning a Filing Under 35 USC 371		Attorney's Docket Number 324-138	
				U.S. Application Number (if known) 09/869570	
International Application Number PCT/FR99/03324		International Filing Date 28 December 1999		Priority Date Claimed 31 December 1998	
Title of Invention DIALING SYSTEM IN A MOBILE RADIO TERMINAL AFTER AN INTERNATIONAL TRANSFER					
Applicant(s) for DO/EO/US Ramzi SANBAR					

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items under 35 USC 371:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 USC 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 USC 371.
3. ☐ This express request to begin national examination procedures (35 USC 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 USC 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed 35 USC 371(c)(2)
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 USC 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 USC 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 USC 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 USC 371(c)(4)). (☐ Executed ☐ Unexecuted)
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 USC 371(c)(5)).

Items 11 to 16 below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A **FIRST** preliminary amendment.
  - ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: Applicant is entitled to Small Entity Status

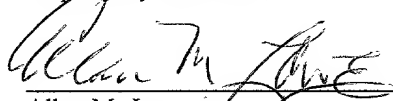
Application Number <b>09/869570</b>		International Application Number PCT/FR99/03324		Attorney's Docket Number 324-138	
				CALCULATIONS	PTO USE ONLY
<input checked="" type="checkbox"/> The following fees are submitted: <b>Basic National Fee (37 CFR 1.492(a)(1)-(5)):</b> <input checked="" type="checkbox"/> Search report has been prepared by the EPO or JPO ..... 860.00 <input type="checkbox"/> International Preliminary Examination Fee paid to USPTO (37 CFR 1.482) ..... \$690.00 <input type="checkbox"/> No International Preliminary Examination Fee paid to USPTO (37 CFR 1.482) but International Search Fee paid to USPTO (37 CFR 1.445(a)(2)) ..... \$710.00 <input type="checkbox"/> Neither International Preliminary Examination Fee (37 CFR 1.482) nor International Search Fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$1000.00 <input type="checkbox"/> International Preliminary Examination Fee paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) ..... \$100.00					
<b>ENTER APPROPRIATE BASIC FEE AMOUNT</b>				\$ 860.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).					
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	17 -20 =	0	× \$18.00	\$ 0.00	
Independent Claims	3 -3 =	0	× \$80.00	\$ 0.00	
Multiple dependent claim(s) (if applicable)			+ \$270.00	\$ 0.00	
<b>TOTAL OF ABOVE CALCULATIONS</b>				<b>\$ 860.00</b>	
Reduction by ½ for filing by small entity, if applicable. Verified Small Entity Statements are not required.				-430.00	
<b>SUBTOTAL</b>				<b>\$ 430.00</b>	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ N/A	
<b>TOTAL NATIONAL FEE</b>				<b>\$ 430.00</b>	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property.				\$ N/A	
<b>TOTAL FEES ENCLOSED</b>				<b>\$ 430.00</b>	
				Refunded:	\$
				Charged:	\$

- a. ☒ A credit card authorization in the amount of \$430.00 to cover the fees is enclosed.
- b. ☐ Please charge my **Deposit Account Number 07-1337** in the amount of \$ \_\_\_\_\_ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to **Deposit Account Number 07-1337**. A duplicate copy of this sheet is enclosed.

Note: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

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Respectfully Submitted,



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29 June 2001

3/PRTS

09/869570

JG18 Rec'd PCT/PTO 29 JUN 2001

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**SPECIFICATION**

TO WHOM IT MAY CONCERN

20 Be it known that I, Ramzi SANBAR, citizen of the French  
Republic and residing at :  
- 3 Rutland Court, Rutland Gardens, London SW7 1BN,  
GRANDE-BRETAGNE

25 have invented new and useful improvements in :

**Dialing in a mobile radio telephone terminal after an  
international transfer**

30 of which the following is a specification :

## BACKGROUND OF THE INVENTION

### 1 - Field of the Invention

5           The present invention relates generally to adaptation of telephone numbers in a radio telephone terminal when it moves from a home radio telephone network to a foreign radio telephone network.

### 10   2 - Description of the Prior Art

          It is assumed in the remainder of the description that the home radio telephone network is , for example, one of the three French national cellular radio telephone  
15   networks (Public Land Mobile Networks PLMN): GSM 900/France Telecom, GSM 900/CEGETEL and DCS 1800/BOUYGUES TELECOM, and the foreign radio telephone network is in Great Britain or in Germany.

          As shown in FIG. 1, the French national switched  
20   telephone network  $RTC_N$  is essentially made up of routing autonomy switches CAA and transit switching centers (not shown) between them. Some of the switches CAA serve as gateways between mobile service switching centers MSC of the three radio telephone networks  $RRN_0$ ,  $RRN_1$  and  $RRN_2$   
25   previously cited.

          The architecture of one  $RRN_0$  of the three radio telephone networks is shown in more detail in FIG. 1 and this network will be considered as the home network, with whose operator a subscriber carrying a mobile radio  
30   telephone terminal MS has entered into a contract. A mobile services switching center MSC in the network  $RRN_0$

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has a role equivalent to a switch CAA in the network  
RTC<sub>N</sub>, and also manages telephone calls for mobile radio  
telephone terminals located in its location area at a  
given time. The switching center MSC is associated with a  
5 visitor location register VLR which contains contract and  
temporary location characteristics of visitor mobile  
terminals, in fact of removable chip cards known as  
Subscriber Identity Modules SIM contained in the visiting  
terminals.

10 Each switching center MSC serves plural fixed  
network subsystems (NSS) each comprising a base station  
controller BSC managing the allocation of digital  
channels to visitor mobile terminals, the power of the  
base transceiver stations and intercellular handovers  
15 between base transceiver stations. Each base transceiver  
station BTS covers a radioelectrical cell in which mobile  
terminals are located at a given time.

The national radio telephone network RRN<sub>0</sub> further  
includes a home location register HLR which includes, for  
20 each terminal MS for a subscriber having a contract with  
the network RRN<sub>0</sub>, the international mobile subscriber  
identity IMSI, the subscriber directory number MSISDN  
(Mobile Station ISDN Number), their contract profile and  
the number of the visitor location register VLR which is  
25 updated each time that the mobile radio telephone  
terminal MS is transferred between two location areas in  
the network RRN<sub>0</sub>. The register HLR exchanges signals with  
the switching centers/registers MSC/VLR via a signaling  
network with signaling channels SS7 (Signaling System  
30 number 7). The registers VLR and HLR are also connected  
to signaling points of the signaling network associated

with the switched telephone network  $RTC_N$ , in particular for signaling the setting up of calls between a terminal of the network  $RRN_1$  and any other terminal of the fixed network  $RTC_N$  or of one of the radio telephone networks  $RRN_0$  to  $RRN_2$ .

FIG. 1 also shows diagrammatically a "foreign" switched telephone network  $RTC_E$ , for example a British or German network, and a foreign radio telephone network  $RR_E$  served by the network  $RTC_E$ . To set up international calls, the national network  $RTC_N$  includes international transit switching centers CTI connected to the foreign switched telephone networks, such as the network  $RTC_E$ . Some radio telephone networks, such as the network  $RRN_2$ , have their own international transit switching center TSC. Each country is indicated in an international telephone number by a country code CC with one, two, three or four digits, for example 33 for France, 44 for Great Britain, 49 for Germany, 1 for the USA, 352 for Luxembourg, etc.

In the worldwide numbering scheme each subscriber has a unique directory telephone number MSISDN which takes the form CC NN, in which NN denotes the meaningful national number. In France for example, NN is equal to I AB PQ MCDU, where I denotes the trunk indicator, i.e. the national destination code of the network with which the subscriber has entered into a contract, for example 1 for the Ile de France region, 4 for the south-east France region, 6 for the national radio telephone networks, and AB PQ MCDU is the subscriber number allocated by the network operator. When a national call is set up between two mobile or fixed terminals of the national network



application algorithms, a non-volatile memory EEPROM which contains all of the characteristics associated with the subscriber, such as their identity IMSI, contract profile, list of called numbers with names, security data (confidential code), etc., and a random-access memory RAM for processing data received from and transmitted to the digital circuit of the terminal. In particular, the flowchart shown in FIG. 2 is managed by the read-only memory ROM in collaboration with the directory of telephone numbers and the last dialed number in the memory EEPROM in order to compose the SET UP message in the memory RAM.

In a first step E1, the subscriber chooses between manual entry of the called party number NA on the keypad to be written into the memory EEPROM in the next step E2, or by making a selection from a menu on the display of the terminal by pressing keys or by spoken commands if the terminal includes a voice recognition device, the directory of telephone numbers already stored in the memory EEPROM after searching for the called party by name in the next step E3.

The called party number NA entered on the keypad or selected by reading the memory EEPROM and confirmed takes the form NA = EN NN = EN I AB PQ MCDU. EN denotes a header which has one of the following three configurations:

1) EN = 0 = trunk prefix, if the subscriber has entered or selected only a ten-digit French "national" number starting with the predetermined digit 0, for example 0 NN = 01 45 81 74 57 for a called party in the Ile-de-France region ;



2) EN = 00 CC, if the subscriber has entered or selected a number MSISDN preceded by the international prefix 00, which is not accepted in all foreign telephone networks RTCE, for example 00 49 NN for a called party in Germany or 00 33 NN for a national called party in France ;

3) EN = + CC, if the subscriber has entered or selected a number MSISDN preceded by the international code +, which is a symbol found on the star \* key of the keypad and recognized in all foreign telephone networks RTCE, for example + 44 NN for a called party in Great Britain or + 33 NN for a national called party in France.

The next step E4 scrutinizes the format of the called party number NA, and in particular the header EN, after reading the called party number NA in the memory EEPROM.

If the called party number NA is 0I AB PQ MCDU, i.e. if EN = 0, it is of the open format and a Type-Of-Number field TON occupying bits 5, 6 and 7 in a third byte of the SET UP message, the next five bytes of which contain the digits of the national number NN in binary coded decimal BCD, is set to zero in step E5: TON = 0. Similarly, if the called party number NA is 00 CC NN, it is in the open format and the field TON is TON = 0 in step E5. In both cases, in step E6 the called party number NA is inserted, without changing it, into the SET UP message which in the final step EF is transmitted by the mobile terminal MS to the mobile services switching center MSC to which it is temporarily logged on.

If in step E4 the called party number NA includes the international code +, i.e. if it is in the

international format + CC NN, the next step E8 sets the  
type-of-number field TON to 1: TON = 1, and removes the  
international prefix + from the called party number NA.  
In the next step E9 the called party number  
5 MSISDN = CC NN is inserted into the SET UP message which  
is finally transmitted by the mobile terminal MS in the  
final step EF.

10 In the mobile services switching center MSC to  
which the radio telephone terminal MS is logged on, the  
TON field in the SET UP message is read in order to  
insert the meaningful national or international number  
into the call request message to other switches in the  
direction of the called party. If TON = 0, the national  
prefix 0 is removed and the significant national number  
15 NN is inserted into the call request message, or the  
international prefix 00 is removed and the meaningful  
international number CC NN is inserted into the call  
request message unless the code CC is that of the country  
of origin, i.e. CC = CC<sub>0</sub> = 33 for France. If TON = 1, the  
20 international number received in the SET UP message is  
inserted without changing it into the call request  
message if the code CC is that of a foreign country, in  
this instance a code other than the code CC<sub>0</sub> = 33 for  
France. If TON = 0 and CC = 33 or TON = 1 and CC = 33 the  
25 country of origin code, here that of France, is removed  
and only the significant national number NN is inserted  
into the call request message.

30 If the subscriber of the mobile terminal MS is  
traveling abroad as indicated by the notation MS' in FIG.  
1 and wishes to set up a call via a radio telephone

network  $RR_E$  connected to a foreign switched telephone network  $RTC_E$ , the subscriber can reliably use only called party numbers in the international format  $NA = + CC NN$ , or, in some countries, where applicable, called party numbers in the open format  $NA = 00 CC NN$ . Not all of the many called party numbers stored in the open format  $0 NN$  can be used, and have to be entered again after the code + or the prefix 00, followed by the code of the country of origin, here  $CC_0 = 33$  for France.

What is more, subscriber who is in the habit of storing called party numbers in their country of origin in the open format  $0 NN$  will be tempted to enable the option to read such numbers, and after having received a disabling message or having conversed with an unintended foreign subscriber, will be obliged to enter the number again or to store the number again in the memory EEPROM with the format  $00 CC_0 NN$  or  $+ CC_0 NN$ .

#### OBJECT OF THE INVENTION

The present invention remedies the above drawbacks when a subscriber is traveling abroad so that any called party number of the country of origin already stored in the mobile radio telephone terminal or entered in the open format  $0 NN$  is converted to the form of an international number  $CC_0 NN$  for the country of origin, without interfering with or modifying the number adaptation functions in the foreign switching centers  $MSC_E$  and switches  $CAA_E$  and the national switches  $CAA$  and national switching centers  $MSC$  through which call request messages from the radio telephone terminal pass.

## SUMMARY OF THE INVENTION

Accordingly, a method of dialing used in a radio  
5 telephone terminal is characterized by the following  
steps if a called party number is not an international  
number :

- determining the indicator of the country in  
which the terminal is currently located,

10 - comparing a country-of-origin indicator to the  
determined indicator of the country in which the terminal  
is currently located,

- not modifying the called party number if the  
compared country indicators are identical, and

15 - automatically adding a country-of-origin code  
to the beginning of the called party number if the  
country indicators compared are different.

Thus the called party number is first entered and  
read in the memory of the terminal, or is read in the  
20 directory of telephone numbers already stored in the  
memory of the terminal, and the step of comparing  
succeeds in reading the called party number in the memory  
of the terminal.

In this way, open format called party numbers of  
25 the country of origin or residence of the subscriber are  
still used and are converted to the international format  
only when the subscriber is abroad.

The-country-of-origin indicator is read,  
30 either in a subscriber identity stored in the  
terminal and fixed by the subscription,

or in a dedicated field of a memory of the terminal, which can be programmed by the subscriber in order to enter therein the indicator of their country of residence, for which many telephone numbers are stored in the terminal, in preference to the indicator of the contract country which is contained in the subscriber identity and which may be different from the indicator of the country of residence.

The indicator of the country in which the terminal is currently located is determined by reading in a location area identification stored in the terminal and updated on each transfer to a different location area and therefore, in particular, in the event of a transfer from a national network to a foreign network, or vice versa. According to another variant, the step of determining includes the following steps before the step of comparing step : selecting a radio telephone network of the country in which the terminal is currently located from a table of networks stored in the terminal, and reading the indicator of the country in which the terminal is currently located in the table in correspondence with the selected network. The step of selecting involves action by the subscriber, and this embodiment is semi-automatic, compared to the first embodiment relating to reading the country indicator in the location area identification, which is automatic.

In practice, a trunk prefix is included at the beginning of the called party number. The method then includes removing a trunk prefix from the called party number before the step of adding. The method can include removing a trunk prefix from the called party number

before the step of adding if the compared country indicators are different.

5 The country-of-origin code is preferably read in a dedicated field of a programmable memory of the terminal or can be read in correspondence with the country-of-origin indicator in a table of countries stored in the terminal.

10 When it has been processed the called party number is inserted into a dialing set up message transmitted by the terminal which contains a type-of-number field, i.e. a field indicating the open or international format. The method then includes setting a type-of-number field to an international format state if the compared country indicators are different.

15 Preferably, after the step of adding, the method includes a step of adding an international code to the beginning of the called party number in order to write it as an international number in a memory of the terminal, in particular instead of the initial called party number  
20 if the latter is already stored in the directory of telephone numbers.

25 If a called party number is preceded by an international code or prefix, the international code or prefix is removed from the above called party number. The type-of-number field included in a dialing set up message transmitted by the terminal is set to an international format state if the called party number is a number preceded by an international code or prefix.

30 The step of comparing step preferably follows on from reading the called party number in a memory of the terminal.

The invention also relates to a radio telephone,  
or a subscriber identification module that can be  
inserted in a radio telephone terminal, containing in its  
memory a dialing algorithm for implementing the dialing  
method according to the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present  
invention will become more clearly apparent on reading  
the following description of several preferred  
embodiments of the invention, which description is given  
with reference to the accompanying drawings, in which:

- FIG. 1 is a block flowchart of radio telephone  
networks in the context of an international telephone  
call and has already been commented on ;

- FIG. 2 is a dialing flowchart used in a prior  
art mobile radio telephone terminal and has already been  
commented on ; and

- FIG. 3 is a dialing algorithm used in a mobile  
radio telephone terminal according to the invention.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The dialing method according to the invention  
shown in FIG. 3 and implemented in the form of software  
in the read-only memory ROM of the card SIM (FIG. 1) of  
the radio telephone terminal MS of the subscriber  
includes the steps E1 and E9 and EF of the FIG. 2  
flowchart implemented in a SIM microprocessor card of a  
prior art mobile radio telephone terminal.

5 The successive steps E7, E8, E9 and EF are executed if in step E4 the called party number NA begins with the international code +, i.e. is in the international format NA = + CC NN, with the country code CC of the country of origin, CC<sub>0</sub> = 33 for France, in which the subscriber-owner of the card SIM has entered into a contract, or that of a foreign country, for example CC = 44 for Great Britain or CC = 49 for Germany.

10 The successive steps E4, E5, E6' = E6 and EF already described with reference to FIG. 2 are executed if the called party number NA begins with the international prefix 00 and is in the open format NA = 00 CC NN, whether the country code CC is that of the country of origin CC<sub>0</sub> = 33 or that of a foreign country, 15 for example 44 or 49.

20 These two called party number configurations remain unchanged because the first is accepted by all telephone networks worldwide and the second is accepted by most foreign telephone networks. The subscriber re-uses these two configurations of the called party number when traveling abroad, for example using their mobile radio telephone terminal situated at MS' in the coverage area of a mobile services switching center MSC<sub>E</sub> of the foreign radio telephone network RR<sub>E</sub> shown in FIG. 1 to 25 call a called party in a foreign country, including the country in which the subscriber is currently located, or even in the subscriber's country of origin, here France.

30 As an alternative to this, for the called party number to be acceptable in all countries, even if it originally starts with the prefix 00, step E6' is replaced by a step E6" during which the TON field is set



to 1 and the prefix 00 is eliminated in order to insert  
TON = 1 and CC NN into the SET UP message in the next  
step E9, as shown in dashed outline in FIG. 3.

5           If subscriber is traveling abroad, outside their  
country of origin, i.e. France, and wishes to use their  
mobile radio telephone terminal at MS' (FIG. 1) to  
request the setting up of a telephone call with a called  
party situated in the subscriber's country of origin,  
10 without changing their dialing habits, the subscriber  
enters on the keypad, or where applicable speaks, the  
number of the called party in step E2, or searches for  
this called party by name, where applicable by speaking  
it, in the directory stored in the card SIM of their  
15 terminal MS, and enables the name so that the number is  
shown on the display of the terminal MS in step E3. The  
number of the called party in the country of origin  
begins with the trunk prefix 0 and is in the open format  
NA = 0 NN, for example 04 42 36 50 00. The switching  
20 center MSC<sub>E</sub> of the foreign radio telephone network RR<sub>E</sub>  
removes the prefix 0 from the number NA received in the  
SET UP message (step E6) according to the prior art, and  
as a result of this the foreign telephone network RTC<sub>E</sub>  
sets up a call to an unintended called party in the  
25 country in which the subscriber is located, or does not  
recognize the prefix 0 and then refuses to set up the  
requested call. Whichever of these situations applies,  
the subscriber fails to communicate with the called party  
in the country of origin according to the prior art.

30           As shown in FIG. 3, if NA = 00 CC NN, the

invention introduces steps S1 to S9 and a step E6' analogous to the step E6, between the steps E5 and EF.

If the called party number is in the open format, and after the type-of-number field TON has been set to 0 in step E5, step S1 distinguishes between the national or international character of the header EN in the called party number NA = EN NN read in the memory EEPROM of the card SIM. If the number NA starts with the international prefix, i.e. with a header EN equal to 00 CC, the read called party number NA = 00 CC NN, for example with the country code CC equal to 44, 49 or 33, is inserted with the field TON = 0 into the SET UP message in step E6' and is transmitted by the terminal MS' to the foreign mobile services switching center MSC<sub>E</sub> in step EF, as in the prior art shown in the successive steps E5, E6 and EF in FIG. 2.

If step S1 detects the trunk prefix 0 at the beginning of the called party number NA in the form NA = 0 NN = 0I AB PQ MCDU, the next three steps S2, S3 and S4 are executed in the memory RAM of the card SIM.

Step S2 reads in the memory EEPROM of the card SIM a mobile country code indicator MCC<sub>0</sub> of the subscriber's country of origin, here MCC<sub>0</sub> = 208 for France, in the first three-digit field of the subscriber's international mobile subscriber identity IMSI. The IMSI identity also contains the mobile network code indicator MNC<sub>0</sub> of the subscriber's home radio telephone network RRN<sub>0</sub> in a second field.

In an alternative embodiment, instead of reading the indicator MCC<sub>0</sub> of the country of origin in which the

subscriber has a contract, step S2 reads a dedicated field in the memory EEPROM in which the subscriber has stored the indicator of their usual country of residence, which may be different from the country in which the subscriber has a contract. For example, for a French subscriber who has a contract with FRANCE TELECOM in France, but who is resident in Germany, and consequently has stored German called party numbers in the open format 0 NN, for example 06721 99 50 41, the country indicator in the subscriber identity IMSI corresponds to France and in this embodiment the country indicator in the dedicated field read in step S2 corresponds to Germany; in this example, the subscriber is considered to be "abroad" when outside Germany.

Step S3 determines the country in which the subscriber's terminal is located at the time of the call set-up request.

The base transceiver stations BTS (FIG. 1) periodically broadcast the identifications of their location areas on respective Broadcast Control Channels BCCH. A Location Area Identification LAI includes a three-digit mobile country code indicator  $MCC_0$ ,  $MCC_E$  of the country in which the base transceiver station is located and more generally containing the location area of the mobile services switching center MSC,  $MSC_E$  in which the base transceiver station is located, together with a mobile network code indicator  $MNC_0$ ,  $MNC_E$  of the radio telephone network  $RRN_0$ ,  $RR_E$  which includes the base transceiver station. The subscriber's mobile terminal periodically scrutinizes the broadcast control channel of the cell in which it is located. If the radio telephone

terminal decides to perform a change of cell (handover) at the time of periodically measuring carrier frequencies communicated by the list contained on the broadcast control channel to which the terminal is currently  
5 synchronized, the radio terminal stores in the memory EEPROM the identification LAI of the new cell to which it wishes to synchronize, and communicates its location to the old visitor location register VLR, VLR<sub>E</sub>.

0966550 "101201  
10 If the subscriber is traveling abroad, the identifications LAI in the broadcast control channel list no longer contain the number MNC<sub>0</sub> of the home mobile radio telephone network RRN<sub>0</sub>. The mobile terminal MS' scans the radio telephone carrier frequencies to determine the broadcast control channel received best.  
15 The whole of the identification LAI<sub>E</sub> of the new location area of the broadcast control channel is stored in the memory EEPROM, including the country indicator MCC<sub>E</sub> and the indicator MNC<sub>E</sub> of the foreign network RR<sub>E</sub>.

In a first embodiment, step S3 reads the country  
20 indicator MCC<sub>E</sub> in the location area identification LAI stored in the memory EEPROM at the time of the last transfer between areas.

In a second embodiment, a list of indicators MNC<sub>E</sub> of foreign telephone networks RR<sub>E</sub> is pre-stored in the  
25 memory EEPROM of the card SIM when the contract is entered into, together with the names of the corresponding countries. The operators of the networks concerned have entered into cooperation agreements with the operator of the home network RRN<sub>0</sub>, for example. In  
30 this case, the subscriber selects on the display the foreign network RR<sub>E</sub> of the country in which they are

currently located. Step S3 then reads the indicator  $MCC_E$  of the country covered by the selected foreign network and the indicator  $MNC_E$  of the selected foreign network in order for the terminal MS' to select a traffic channel of that network.

In the next step S4, the indicator of the country of origin  $MCC_0$  or the indicator of the country of residence in the dedicated field, read in step S2 is compared to the indicator  $MCC_E$  of the "foreign" country contained in the location area identification LAI or selected in the table of networks. If  $MCC_0 = MCC_E$ , the subscriber is still in the country of origin or country of residence. The called party number  $NA = 0\ NN$  can be used and remains unchanged; it is inserted into the SET UP message in step S5, as in the prior art step E6 (FIG. 2).

If  $MCC_0$  is different from  $MCC_E$  in step S4, the subscriber is outside the country of origin or country of residence. The national called party number  $NA = 0\ NN$  can no longer be used and is converted into a meaningful international number in the subsequent steps S6 to S9 in order for it to be acceptable to any foreign network.

In step S6 the field TON, which was initially at 0 for the open format, changes to 1 for the international format. In a further embodiment, the field TON can be set to 1 before step E4, for example, and changed to 0 only on executing step E6' or S5. Then, in step S7, the trunk prefix 0 is removed from the called party number NA, which becomes the meaningful national number NN. In the next step S8, the country-of-origin or residence code  $CC_0$  is read in correspondence with the country indicator  $MCC_0$

in a table which is pre-stored in the memory EEPROM and which establishes the correspondence between the foreign country indicators MCC<sub>0</sub>, MCC<sub>E</sub> and the country codes CC<sub>0</sub>, CC<sub>E</sub>, respectively, or is read in a dedicated field of the memory EEPROM. The country code CC<sub>0</sub> read in this way is added to the beginning of the national number NN. The called party number CC<sub>0</sub> NN with the field TON = 1 is inserted into the SET UP message in step S9, as in step E9. Finally, in the final step EF the set up message is transmitted to the switching center MSC<sub>E</sub> to which the telephone terminal MS' is temporarily logged on.

The invention provides the option in step S9 of adding the international code + to the meaningful international number CC<sub>0</sub> NN and of writing the called party number + CC<sub>0</sub> NN in the directory in the memory EEPROM in the card SIM instead of the original number 0 NN. In this case, as and when called party numbers of the country of origin or residence are used by the subscriber when abroad, those numbers will be stored in the international format and processed quickly by steps E7, E8 and E9.

In a simpler embodiment, if an open format called party number NA in the form NA = 0I AB PQ MCDU is to be entered on the keypad or spoken into the terminal MS, whether the terminal is in the country of origin or residence or abroad, the called party number NA being entered is automatically converted into the international format + CC<sub>0</sub> I AB PQ MCDU. In this case, step S7 of removing the trunk prefix 0, step S8 of adding of the country of origin or residence code CC<sub>0</sub> and the addition

to step S9 of writing the called party number in the international format + CC<sub>0</sub> NN are transferred into step E2 before writing completely the called party number converted to the international format in the memory EEPROM of the card SIM of the mobile radio telephone terminal.

Similarly, if the called party number being entered is an open format international number beginning with the international prefix 00, this prefix is replaced by the international code + before writing the complete called party number into the memory EEPROM of the card SIM of the terminal.

In this simple embodiment, the FIG. 3 method includes the succession of steps S7, S8 and the addition to step S9 corresponding to writing in step E2, enabling and reading in step E4, and steps E7, E8 and E9 if the called party number entered is a national number beginning with the trunk prefix 0.

WHAT I CLAIM IS :

1. A method of dialing used in a radio telephone terminal, characterized by the following steps if a called party number is not an international number:

- determining an indicator of the country in which said terminal is currently located,

- comparing a country-of-origin indicator to the determined indicator of the country in which said terminal is currently located,

- not modifying said called party number if the compared country indicators are identical, and

- automatically adding a country-of-origin code to the beginning of said called party number if said compared country indicators are different.

2. A method according to claim 1, including reading said country-of-origin indicator in a subscriber identity stored in said terminal.

3. A method according to claim 1, including reading said country-of-origin indicator in a dedicated field of a memory of said terminal.

4. A method according to claim 1, wherein the determination step includes reading said indicator of the country in which said terminal is currently located, in a location area identification stored in said terminal.

5. A method according to claim 1, wherein said step of determining includes the following steps:



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- selecting a radio telephone network of said country in which said terminal is currently located from a table of networks stored in said terminal, and

5 - reading said indicator of the country in which said terminal is currently located in said table in correspondence with the selected network.

10 6. A method according to claim 1, including removing a trunk prefix from said called party number before said step of adding.

15 7. A method according to claim 1, including removing a trunk prefix from said called party number before the step of adding if the compared country indicators are different.

20 8. A method according to claim 1, including reading said country-of-origin code in a dedicated field of a memory of said terminal.

25 9. A method according to claim 1, including reading said country-of-origin code in correspondence with said country-of-origin indicator in a table of countries stored in said terminal.

30 10. A method according to claim 1, including setting a type-of-number field included in a dialing set up message transmitted by said terminal, to an international format state if the compared country indicators are different.

11. A method according to claim 1, wherein said step of adding precedes writing said called party number in a memory of said terminal.

5 12. A method according to claim 1, wherein said step of comparing follows reading of said called party number in a memory of said terminal.

10 13. A method according to claim 1, including, after the step of adding, a step of adding an international code to the beginning of said called party number in order to write it as an international number in a memory of said terminal.

15 14. A method according to claim 1, wherein, if a called party number is preceded by an international code or prefix, the international code or prefix is removed from the above called party number.

20 15. A method according to claim 14, including setting a type-of-number field included in a dialing set up message transmitted by said terminal, to an international format state if the called party number is a number preceded by an international code or prefix.

25 16. A radio telephone terminal storing in a memory an algorithm for implementing a method of dialing including the following steps if a called party number is not an international number:

30 - determining an indicator of the country in which said terminal is currently located,

- comparing a country-of-origin indicator to the determined indicator of the country in which said terminal is currently located,

5 - not modifying said called party number if the compared country indicators are identical, and

- automatically adding a country-of-origin code to the beginning of said called party number if said compared country indicators are different.

10 17. A subscriber identification module adapted to be inserted in a radio telephone terminal storing in a memory an algorithm for implementing a method of dialing including the following steps if a called party number is not an international number:

15 - determining an indicator of the country in which said terminal is currently located,

- comparing a country-of-origin indicator to the determined indicator of the country in which said terminal is currently located,

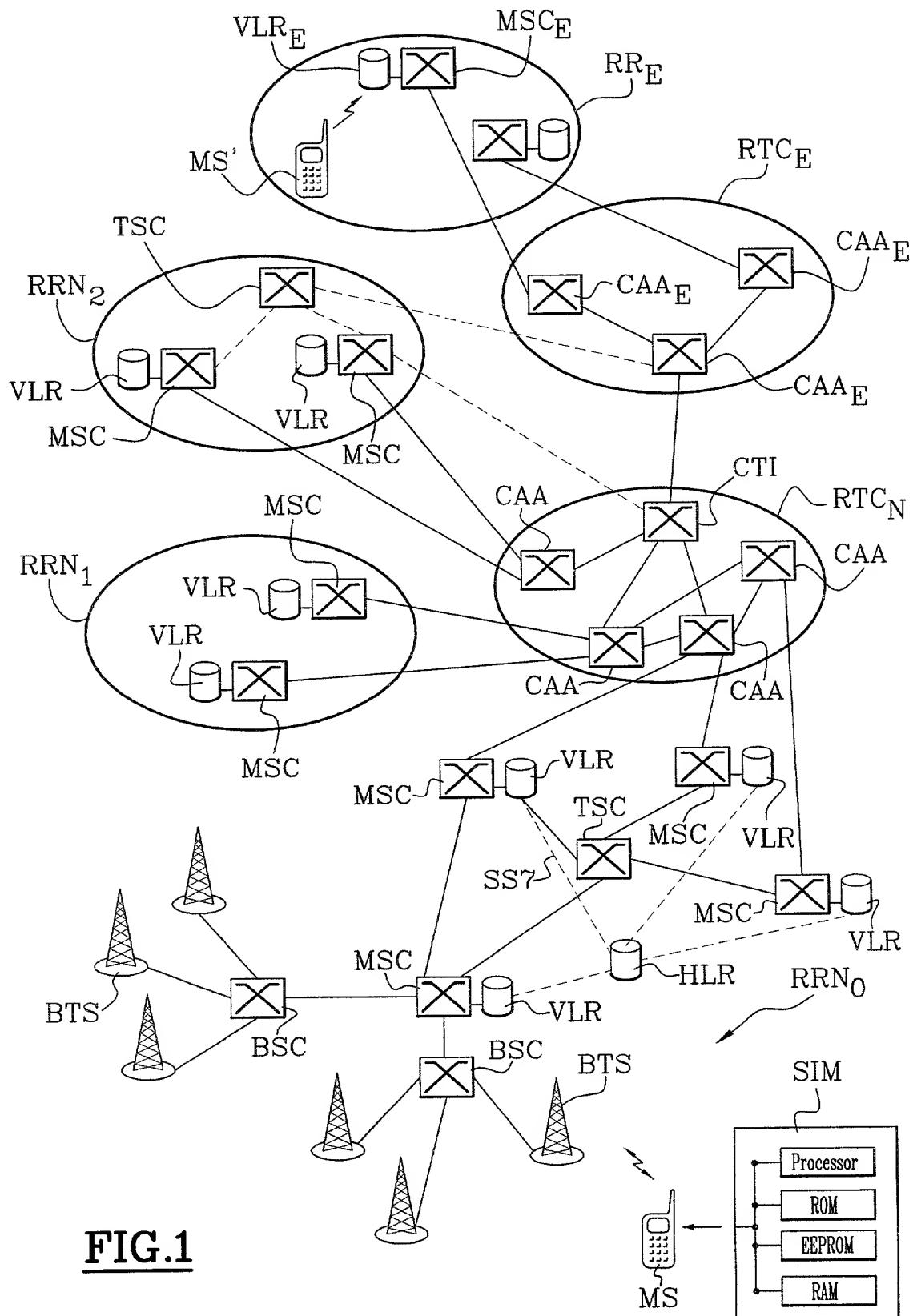
20 - not modifying said called party number if the compared country indicators are identical, and

- automatically adding a country-of-origin code to the beginning of said called party number if said compared country indicators are different.

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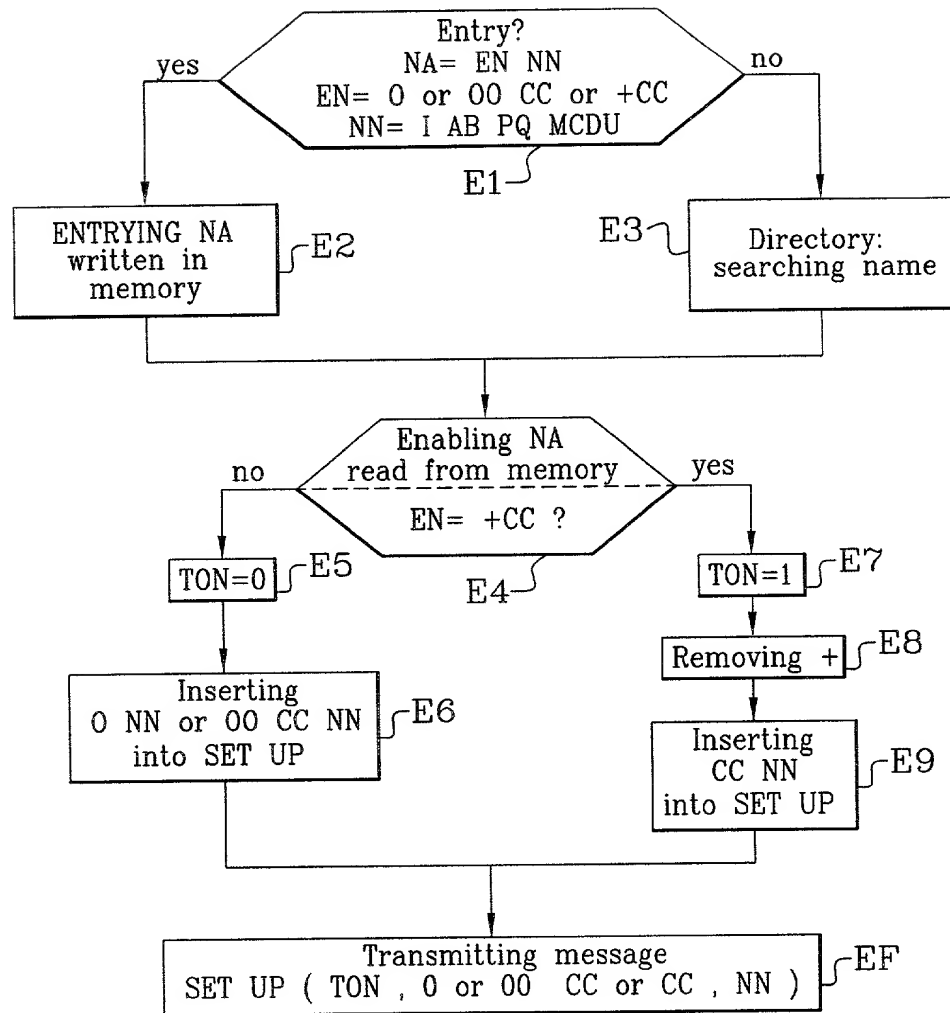
## ABSTRACT OF THE DISCLOSURE

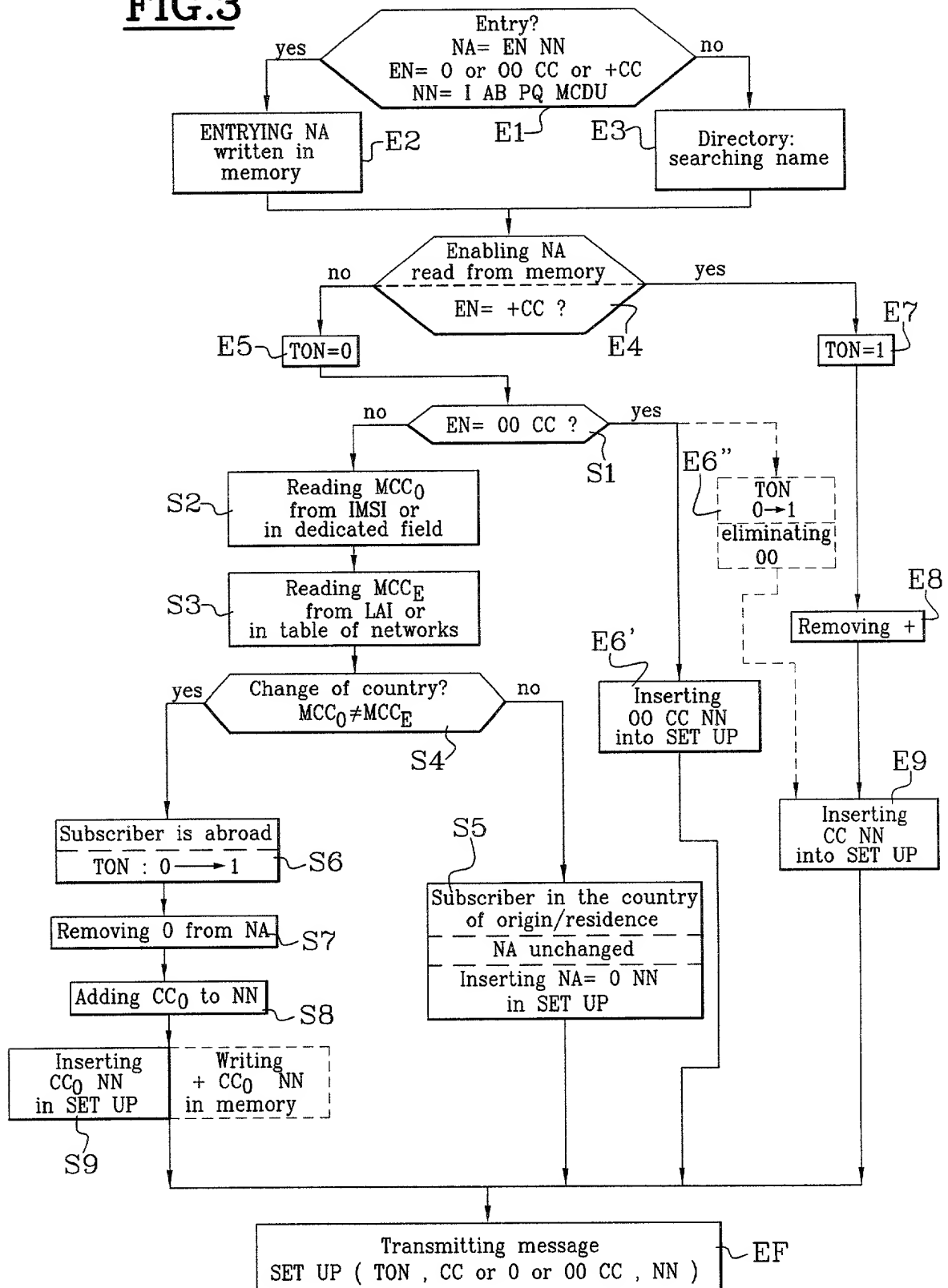
5 The invention aims at facilitating the use of numbers of called party in the country of origin of a subscriber having a mobile radio telephone terminal, when the subscriber is travelling abroad. When the called number NA = 0 NN is not an international number, a country-of-origin indicator read in the subscriber identity IMSI and an indicator of the country in which 10 the terminal is currently located, read in a local area identification are compared. The called party number is not modified when the compared country indicators are identical. A country-of-origin code is added at the beginning of the called party number when the compared 15 country indicators are different, so that the number transmitted by the terminal is in the international format.



**FIG.2**

( PRIOR ART )



**FIG.3**

**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled "Dialing in a mobile radio telephone terminal after an international transfer", the specification of which

☐ is attached hereto ☒ was filed on June 29, 2001 as Application Serial No. 09/869,570 and was amended on (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

**Prior Foreign Application(s):****Priority Claimed?****Number Country Day/Month/Year filed****Yes No**

98-16731 FRANCE 31/12/1998

X

I hereby authorize the U. S. attorneys and agents named herein to accept and follow instructions from CABINET MARTINET & LAPOUX as to any actions to be taken in the Patent and Trademark Office regarding this application without direct communication between the U. S. attorney(s) and the undersigned. In the event of a change in the person(s) from whom instructions may be taken, the U.S. attorney(s) will be so notified by the undersigned.

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or Section 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:



Prior U. S. Application(s):

Serial No.

Filing Date

Status: Patented, Pending, Abandoned

PCT international  
application

No. PCT/FR99/03324 28 December 1999

Pending

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorney(s) and/or agent(s): Allan M. Lowe, Reg. No. 19,641; Israel Gopstein, Reg. No. 27,333; Benjamin J. Hauptman, Reg. No. 29,310; Kenneth M. Berner, Reg. No. 37,093, Michael G. Gilman, Reg. No. 19,114; and Randy Noranbrock, Reg. No. 42,940, all of

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with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and all future correspondence should be addressed to them.

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Date:

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Inventor's signature :

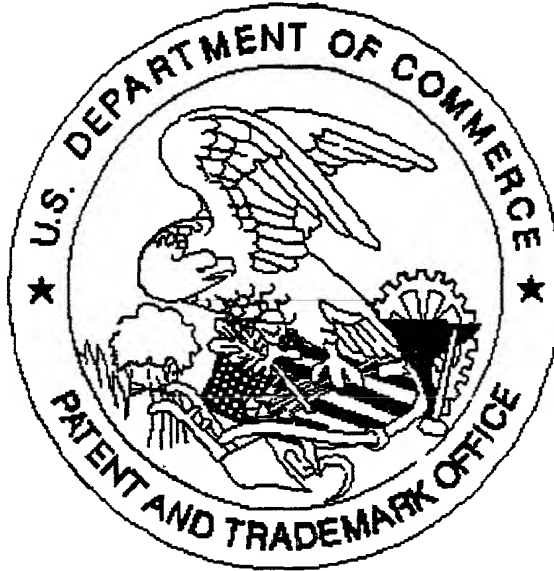
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